

REMARKS

The Applicants appreciate the Examiner's careful examination of this case. Reconsideration and re-examination are respectfully requested in view of the instant remarks.

Claim 11 has been rejected as being unpatentable over a combination of US Patent 5,320,534 to Thomas and US Patent 6,356,664 to Dunn et al. It is noted that in the first Office Action, the Examiner rejected original Claim 1 as being unpatentable over Dunn et al. Thus in the first Office Action, Dunn et al formed the main citation. In the present second Office Action, Thomas forms the main citation, with Dunn et al being used to support the missing parts from Thomas. Thus the Examiner has changed his approach on the question of patentability, and it is respectfully submitted that the need to attack the Applicants' invention from two different angles itself implies a degree of patentability.

In the present Office Action, the Examiner has rejected Claim 11 and states that:

"Thomas teaches a multi-channel image display device that includes two low-resolution image channels for the background scene (Figure 1, projectors 32 and 34)"

It is noted that Thomas at column 4 lines 24 – 26 discloses projectors 32 and 34 and states:

"The HMAoI display of the present invention adds two additional video projectors 32 and 34 to the video projectors used for the DART display"

Column 5 lines 1 – 3 of Thomas state that:

".....the high resolution image 48 from video projector 32 is in the center of view 46 surrounded by the intermediate resolution image 50 from the video projector 34." (emphasis added)

The Applicants therefore respectfully submit that Thomas does not disclose at least two low frame rate source channels for the background scene as claimed by the applicant in claim 11.

The Examiner continues to state that Thomas discloses:

"..... a high-resolution foreground scene (Figure 1, Item 18)...."

Column 4 lines 7 – 8 of Thomas disclose:

"DART display surface 14 is located about 3.5 feet from the eye 18 of simulator pilot 12."

It is important to note that Item 18 in Figure 1 is the pilot's eye, and not a foreground image.

The Examiner goes on to state that Thomas discloses:

".....where the foreground image may be superimposed at any location of the background (column 2, lines 37 – 47)".

In fact column 2 lines 39 – 47 of Thomas state as follows:

"Another unique discovery of the present invention is that the use of a totally separate higher resolution area of interest display from the lower resolution peripheral display, instead of, as in the prior art, displaying the higher resolution image on the same display surface as the lower resolution display, has the additional advantage of obscuring any defects which might be inherent in the lower resolution display, so that the overall display is better, in effect, than the sum of its parts."

The paragraph immediately above identifies the invention of Thomas as having "a totally separate higher resolution area of interest display.....".

It is important to note that the invention of the present application does not have a separate display for displaying the higher resolution area of interest. The display apparatus of the present invention displays high resolution images everywhere on the display, see for example page 3 lines

12 – 16 of the Applicant's specification which states that "The large array tiled projection system gives a large number of channels which provides very high resolution imagery everywhere in the field of view of the user, approaching or exceeding eye limiting resolution."

The Examiner continues to say the following:

"The difference between the Thomas' invention and the claimed invention lies in how the two image qualities are defined and implemented. Thomas offers the possibility of using different frame rates for the background and foreground images in an attempt to reduce the "image generation costs and optimise the display to human visual system requirements" (see column 5 lines 37 – 40)."

It is to be noted that column 5 lines 37 – 40 of Thomas actually state the following:

"The helmet mounted display and background scenes could be run at different video rates to reduce image generation costs and optimise the display to human visual system requirements."

The Examiner admits that there is a difference between Thomas and the Applicant's invention. The definition and implementation of the image qualities is clearly not the same.

It is important to note that the background image disclosed by Thomas is a low-resolution image provided by a first set of projectors on a known DART type

display. The high-resolution image is produced by a second set of projectors and viewed by the user via a helmet-mounted area of interest display which is described above as a "totally separate higher-resolution area of interest display". The invention of Thomas combines two displays. The first, displaying background image, is in a rear projected display displaying real images on one or more screens. The second is a helmet-mounted display displaying virtual images via a beam splitter and a curved partial mirror. Also, Thomas suggests different video rates for the helmet-mounted display and background scenes to reduce costs and to optimise the display to human visual system requirements. If the video or frame rate of the low-resolution background is reduced, the quality of the background image will be reduced to such an extent that it would no longer be satisfactory for some training purposes. The background image would have to have both low-resolution and a low video rate. The boundaries or areas where the high-resolution image meets the low-resolution background would also be noticeable with a change in both resolution and video rate.

In contrast, the Applicant's invention provides a display displaying high-resolution images across the display, with one or more areas of the display having a higher video rate than the remainder of the display. The display is a multi-channel projected display, displaying real images onto a screen. The Applicant's invention does not have separate display means for displaying the

high frame rate images. Thomas does not disclose a display with video or frame rates varying within that display. Any variation in resolution or frame rate is achieved by Thomas using separate displays as disclosed in Thomas.

The Examiner also states the following:

".....This idea of different foreground and background frame rates is elaborated by the Dunn disclosure (column 7, lines 25 – 32)."

In actual fact Dunn et al column 7 lines 25 – 32 states as follows:

"Furthermore, it is understood that in the sampling process outlined above, contents of buffers 26 would be sampled at different rates, ranging from a highest/reference rate for the buffer(s) containing foreground areas 1 to lesser rates for buffers containing foreground areas 2 and background areas 1, to a minimal or lowest rate for buffers containing background areas 2".

In the Response to the first Office Action, the Applicant submitted arguments showing that Dunn et al does not disclose the invention of the Applicant's invention. The Examiner has now changed his argument to say that Thomas discloses the invention when combined with Dunn et al. However, from the above, it can be seen that in our respectful submission, the Examiner has not correctly identified items in the Thomas Figures, and especially in Figure 1.

In addition, it is to be noted that Thomas uses separate displays for the foreground and background images. In fact, the separate displays, as indicated above, are completely different display types, one being a rear projected display with the other being a helmet-mounted area of interest display. Using a helmet-mounted area of interest display will only allow one image to be inset into the background. This image will be consistently the same size and will always be positioned directly to the front of the user's helmet, unless complicated servo-mechanisms are used to move the helmet mounted area of interest display. The position of the area of interest display is governed by the direction in which the user is looking.

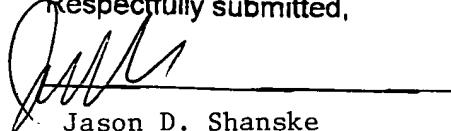
The Applicant's invention uses a single display, which is a multi-channel projected display. One or more areas having a high frame rate and a high resolution can be inset into the low frame rate, high resolution background anywhere within the display independently of where the user is looking or alternatively may be inset where the user is looking by the use of head tracker means.

The Applicants rely for patentability of Claims 12 – 18 on the fact that these claims include all of the features of Claim 11, which Claim 11 is believed to be allowable for the above reasons.

Accordingly, it is respectfully submitted that this application is in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this **RESPONSE** is found to be **INCOMPLETE**, or if at any time it appears that a **TELEPHONE CONFERENCE** with Counsel would help advance prosecution, please telephone the undersigned or one of his associates, collect in Waltham, Massachusetts, at (781) 890-5678.

Respectfully submitted,



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